RECEIVED
CENTRAL FAX CENTER
SEP 23 2004

CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8) Applicant(s): Takashi YUKITAKE et al.	Docket No. JEL29186C-RE-DIV4

Application No.	Filing Date	Examiner	Group Art Unit
09/866,811	May 30, 2001	Richard Lee	2613

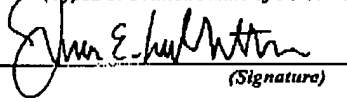
Invention:
METHOD FOR DETERMINING MOTION COMPENSATION

Attention
Special Application - Subject to Expedited Processing

I hereby certify that this APPLICANTS' SUMMARY OF SUBSTANCE OF TELEPHONE INTERVIEW
(Identify type of correspondence)
is being facsimile transmitted to the United States Patent and Trademark Office (Fax. No. 703-872-9306

on September 23, 2004
(Date)

James E. Ledbetter, Reg. No. 28,732
(Typed or Printed Name of Person Signing Certificate)


(Signature)

Note: Each paper must have its own certificate of mailing.

P18/REV02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application

Inventor(s): Takashi YUKITAKE et al. Art Unit 2613

Application No.: 09/866,811 Examiner R. Lee

Filed: May 30, 2001

For: METHOD FOR DETERMINING MOTION COMPENSATION

APPLICANTS' SUMMARY OF SUBSTANCE OF TELEPHONE INTERVIEW

Assistant Commissioner of Patents
Washington, DC 20231

Sir:

The following is a summary of the substance of telephone interviews between the undersigned with the Supervisory Primary Examiner on September 22, 2004 and a telephone discussion with the Primary Examiner on September 13, 2004 in the above-captioned application.

Applicants' attorney noted that, in combination, the following filings should have been sufficient to place this application in condition for allowance: (1) the Amendment after Final rejection filed May 20, 2004, which called for cancellation of claims 4-11 (claims 1-3 were previously canceled) and submitted properly executed formal documents including an Assent

of Assignee and a Rule 3.73(b) Statement and a Supplemental Reissue Declaration (which identified an error being corrected as relating to then canceled claim 4 and thus was defective), (2) the Response filed July 7, 2004, which submitted a new Supplemental Reissue Declaration which properly identified an error being corrected as relating to allowed pending claim 12, and (3) a Supplemental Amendment submitted July 26, 2004, which made an amendment to the specification to overcome an objection newly raised in an Advisory Action dated June 9, 2006.

However, the Examiners have taken the position that filings (1), (2) and (3), in combination, did not place this application in condition for allowance because the cancellation of claims 4-11 in the Amendment after Final Rejection of May 26, 2004 was not effective because the Amendment was not entered. The SPE indicated that it is his policy not to enter an Amendment after Final Rejection unless it places the application in condition for allowance. Thus, as of May 20, 2004, the SPE indicated that the Amendment after Final Rejection was properly in "non-entered" status because the Supplemental Reissue Declaration was still defective.

The July 7, 2004 Supplemental Response submitted a

Supplemental Reissue Declaration that overcame the defective declaration issue noted in the Advisory Action. At this point, the reason for non-entry of the Amendment after Final Rejection was moot.

No Advisory Action has issued relative to the July 7, 2004 Supplemental Response.

Accordingly, the undersigned requests issuance of an Advisory Action relating to the July 7, 2004 Supplemental Response, including (1) an indication of the status of the Supplemental Reissue Declaration filed with that Supplemental Response and (2) an indication of whether the Amendment filed May 20, 2004 was entered when the reason for its previous non-entry was overcome.

In addition, no Advisory Action has issued relative to the above-discussed Supplemental Amendment filed July 26, 2004.

An Advisory Action relating to this paper is also requested.

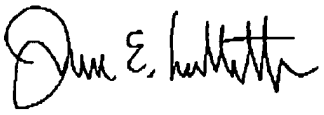
During a telephone discussion on September 13, 2004, the primary examiner indicated that, due to IFW processing, the copies of the Supplemental Reissue Declaration filed July 7, 2004 and the double-column sheet filed July 26, 2004 available in the PTO file are illegible. It is noted that the MPEP does not

require, when specification changes are made, submission of a new double-column sheet showing the specification changes is not needed. Nevertheless, clean copies of both of those papers are attached.

In light of the foregoing, a Notice of Allowance is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below, in order to expedite consideration and allowance of this application.

Respectfully submitted,



James E. Ledbetter
Registration No. 28,732

Date: September 23, 2004
JEL/att
Attorney Docket No. JEL 29186C-RE-DIV4

STEVENS, DAVIS, MILLER & MOSHER, L.L.P.
1615 L Street, NW, Suite 850
P.O. Box 34387
Washington, DC 20043-4387
Telephone: (202) 785-0100
Facsimile: (202) 408-5200

This is a reissue of U.S. Patent No. 5,745,182 which is a division of application Ser. No. 07/970,046 filed Nov. 2, 1992, now U.S. Pat. No. 5,369,449. This application is a division of reissue application no. 09/866,811, filed May 30, 2001, which itself is a division of reissue application no. 09/559,627, filed April 27, 2000 and has the following co-pending related reissue applications: 09/833,680 filed April 13, 2001, 09/833,769 filed April 13, 2001, and 09/833,770 filed April 13, 2001.

1. Field of the Invention

The present invention relates to a method for determining motion compensation of a moving image to be utilized in an apparatus which requires a prediction of a moving image such as an image transmission apparatus and an image apparatus.

2. Description of the Prior Art

With the progress of semiconductor technologies, methods for determining motion compensation to be utilized for a transmission of an image and a compression of an image have been widely used in many fields in recent years. Among such conventional methods for compensating for motion of a moving image, there is one method for compensating for motion of a moving image based on one piece of a reference image.

FIG. 6 is a diagram for showing the concept of the conventional method for compensating for motion of an image. Referring to FIG. 6, a moving image signal is a set of images which are sampled with an equal time interval tO on the time axis. For example, an NTSC signal has images sampled at every 1/60 second for each field and a PAL signal has images sampled at every 1/50 second for each field. When a certain object of which images are to be picked up is moving, for example, the spatial position of an object A in an M-th image is deviated from the spatial position of an object A' in an (M−1)-th image by a portion of a move of the object during a period of tO. Now, consider a case for predicting the M-th image from the (M−1)-th image. In order to make a determination of the M-th image with a high level of precision by compensating for motion of the object from an input image to a reference image during a time difference of tO, the M-th image is divided into blocks including at least one pixel, and a move of each block from the (M−1)-th image to the M-th image is detected so that a pixel value of the image at a position deviated by the portion of this move is set as a determined value. This will be explained with reference to FIG. 6. To obtain a determined value of a pixel X of the M-th image, a pixel X' at the same spatial position as the spatial position of the pixel X in the (M−1)-th image is deviated by a detected move MV of a block unit including the pixel X', so that a pixel X" is obtained. This pixel X" is then used as a determined value of the pixel X. In FIG. 6 the block is assumed to have a size of 3×3.

When a signal is an interlace sisal, there are many alternative cases considered for predicting compensation for motion of an image. For example, either a frame or a field is used for the image, and a frame is used for a reference image and a field is used for an input image, etc. The basic principle is as explained with reference to FIG. 6 above. As one of the examples of the above method for predicting motion compensation, there is Recommendation 723, "Transmission of component-coded digital television signals for contribution-quality at the third hierarchical level of CCITT Recommendation G.702" which was standardized by the CMTT (Commission Mixte CCIR/CCITT pour les Transmissions Televisuelles et Sonores 3). In this recommendation, a determination of motion compensation between frames and a determination of motion compensation between fields are suitably changed over between the two cases. As described above, according to the conventional method for determining motion compensation of an image, a determination is made by compensating for motion of the image based on detected motion of the image. Therefore, the conventional predicting method can predict motion compensation with a high level of precision even if an image is a moving image including movement.

The above-described conventional method for determining motion compensation, however, has problems that it is not possible to accurately determine motion compensation and that, even if it is possible to correctly determination of motion compensation, the image density of an image to be referred to becomes the image density of a reference image, which makes it impossible to make prediction at a higher level of precision.

For example, in the case of determining motion compensation by using an interlace signal as a frame and generating a block from this frame, frames are combined together to compensate motion of an image by disregarding a difference in sampling positions, due to a time difference, between two fields within a frame. Accordingly, when correct sampling positions of the fields are considered, there is such a case that motion compensated in the first field and motion compensated in the second field do not coincide with each other. An example of this case is shown in FIGS. 7A to 7C. Refering to FIGS. 7A to 7C, an input signal is an interlace signal (FIG. 7A). Interlace signals are combined together in a frame to determine motion compensation. When a vertical component of a motion detected now is 1, the first field of the M-th frame is predicted from the second field of the (M−1)-th frame and the second field of the M-th frame is predicted from the first field of the (M−1)-th frame, as shown in FIG. 7B. Moves in the correct field positions is shown in FIG. 7C. As is clear from FIG. 7C, the motion for effecting compensation in the first field of the M-th frame do not coincide with the moves for effecting compensation in the second field of the M-th frame. As explained above, when motion compensation of an image is made by handling an interlace image as a frame, the motion for effecting compensation are different between the first field and the second field. In a vector in which this phenomenon occurs, there is a problem that the precision of the level of prediction is deteriorated.

Next, consider a case of determining motion compensation of an image as an image of a correct position without disregarding a time difference of sampling between images as described above. As examples of this case, there is a case where motion compensation is determined for an interlace signal by generating a block from a field, and a case where motion compensation is determined for a noninterlace signal. In the above cases, motion compensation is predicted by using an image at a position of a correct time. Therefore, there arises no such problem which occurs in the case of determined motion compensation by generating a block from a frame of the interlace signal as described above. However, in this case, motion compensation is determined from one piece of reference image and the pixel density of an image to be referred to becomes the pixel density of the reference image, so that there is a limit to carrying out a determination of motion compensation at a higher level of precision. FIG. 8 shows a case of determined move compensation by generating a block from a field for an input of an interlace signal. In this case, determination of motion compensation is carried out by using a field image as a reference image. Therefore, when a motion vector is 0 there is no sampling point at a position necessary for making a determination on the reference image and, accordingly, a